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10/721,209	11/25/2003	Kenichiro Hashimoto	2271/66978-A	5497

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EXAMINER

DO, AN H

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,209

Applicant(s)

HASHIMOTO ET AL.

Examiner

An H. Do

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-50 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 26-50 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 10/102,464.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/23/2003.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/102,464, filed on 20 March 2002.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 25 November 2003 was filed and is being considered by the examiner.

Specification

3. The disclosure is objected to because of the following informalities: since the instant application is a continuation of U.S. Application No. 10,102,464, the a specific reference to the prior application(s) in the first sentence of the specification is required as follows:

"This is a Continuation of Application No. 10/102,464, filed March 20, 2002, now U.S. Patent No. 6,682,185."

Appropriate correction is required.

Claim Objections

4. Claims 34-36, 39 and 40 are objected to because of the following informalities: the limitation "the liquid rooms" is recited in each of these claims. (for the purpose of the rejection, the above limitation has not been given consideration). There is insufficient antecedent basis for this limitation in the claims.

Appropriate correction is required.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 26-50 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 6,682,185. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter of a liquid drop head as claimed in both instant application and patent is the same as shown in the following Claims Comparison Table:

U.S. Application No. 10/721,209 CLAIMS

26. A liquid drop jet head, comprising:
a nozzle jetting a liquid drop;
a liquid room connected to the nozzle;
a common liquid room connected to the liquid room, to
which the liquid is supplied from a supply opening part;
wherein a width of the common liquid room decreases with
an increase of a distance from the supply opening part.

27. The liquid drop jet head as claimed in claim 26, wherein
the width of the common liquid room on the plane level is
narrower substantially consecutively as the point of the
width is more remote from the supply opening part.

28. The liquid drop jet head as claimed in claim 26, wherein
the width of the common liquid room on the plane level is
narrower substantially gradually as the point of the width is
more remote from the supply opening part.

29. The liquid drop jet head as claimed in claim 26, wherein
the common liquid room has a configuration of a single
wing on a plane level.

30. The liquid drop jet head as claimed in claim 29, wherein
the supply opening part is provided at a wall surface side
opposite to the wall surface side to which the liquid room
in the common liquid room is provided, an external side of
the wall surface, or an external side of the liquid room
being in a direction of a line of the liquid room.

31. The liquid drop jet head as claimed in claim 26,
wherein the common liquid room has a configuration of
dual wings on a plane level.

32. The liquid drop jet head as claimed in claim 31, wherein
a wall surface opposite to the side to which the liquid room
is provided in a common liquid room has a
substantially arc configuration or a semicircle configuration
in a direction of a line.

33. The liquid drop jet head as claimed in claim 31, wherein
the supply opening part is provided at a wall surface side
opposite to the side to which the liquid room in the common
liquid room is provided, an external side of the wall surface,
or an external side of the liquid room being in a direction of
a line of the liquid room.

U.S. Patent No. 6,682,185 CLAIMS

1. A liquid drop jet head, comprising:
a nozzle jetting a liquid drop;
a liquid room connected to the nozzle;
a common liquid room connected to the liquid room; a
supply opening part supplying the liquid to the common
liquid room; and
a pressure generating part that generates a pressure
pressurizing the liquid provided in the liquid room,
wherein the common liquid room has a configuration in
which a width of the common liquid room on a plane level
is narrower as a point of the width is more remote from the
supply opening part.

2. The liquid drop jet head as claimed in claim 1,
wherein the width of the common liquid room on the plane
level is narrower substantially consecutively as the point of
the width is more remote from the supply opening part.

3. The liquid drop jet head as claimed in claim 1,
wherein the width of the common liquid room on the plane
level is narrower substantially gradually as the point of the
width is more remote from the supply opening part.

4. The liquid drop jet head as claimed in claim 1,
wherein the common liquid room has a configuration of a
single wing on a plane level.

5. The liquid drop jet head as claimed in claim 4,
wherein the supply opening part is provided at a wall
surface side opposite to the wall surface side to which the
liquid room in the common liquid room is provided, an
external side of the wall surface, or an external side of the
liquid room being in a direction of a line of the liquid room.

6. The liquid drop jet head as claimed in claim 1,
wherein the common liquid room has a configuration of
dual wings on a plane level.

7. The liquid drop jet head as claimed in claim 6,
wherein a wall surface opposite to the side to which the
liquid room is provided in a common liquid room has a
substantially arc configuration or a semicircle configuration
in a direction of a line.

8. The liquid drop jet head as claimed in claim 6,
wherein the supply opening part is provided at a wall
surface side opposite to the side to which the liquid room in
the common liquid room is provided, an external side of the
wall surface, or an external side of the liquid room being in
a direction of a line of the liquid room.

U.S. Application No. 10/721,209 CLAIMS

34. The liquid drop jet head as claimed in claim 26, wherein a plurality of the common liquid rooms is formed in a direction of a line of the liquid rooms independently.

35. The liquid drop jet head as claimed in claim 29, wherein a plurality of the common liquid rooms is formed in a direction of a line of the liquid rooms independently and the respective common liquid rooms are arranged in parallel.

36. The liquid drop jet head as claimed in claim 29, wherein a plurality of the common liquid rooms is formed in a direction of a line of the liquid rooms independently and the respective common liquid rooms are arranged line-symmetrically.

37. The liquid drop jet head as claimed in claim 34, wherein a number, of the liquid rooms connected to one of the common liquid room is in a range of two or more and thirty-two or less.

38. The liquid drop jet head as claimed in claim 34, wherein the respective common liquid rooms and the liquid rooms have partition walls and a width of the partition wall between the neighboring common liquid rooms has a substantially same length as the width of the partition wall between the neighboring liquid rooms.

39. The liquid drop jet head as claimed in claim 26, wherein the liquid rooms make a plurality of lines and the common liquid rooms for the every line of the liquid rooms are provided independently between the respective lines of the liquid rooms.

40. The liquid drop jet head as claimed in claim 39, wherein the supply opening part being common for the common liquid rooms for the every line of the liquid rooms is provided in the common liquid rooms so that the liquid is supplied.

41. The liquid drop jet head as claimed in claim 26, wherein the common liquid room is formed by anisotropically etching of a silicon substrate.

42. The liquid drop jet head as claimed in claim 41, wherein the common liquid room has a wall surface at a liquid room side of the common liquid room, and the wall surface has a plane configuration having an obtuse angle.

43. The liquid drop jet head as claimed in claim 26, wherein the supply opening part is provided at a surface opposite side to a lid member or a nozzle board forming a wall surface of the liquid room.

U.S. Patent No. 6,682,185 CLAIMS

9. The liquid drop jet head as claimed in claim 1, wherein a plurality of the common liquid rooms is formed in a direction of a line of the liquid rooms independently.

10. The liquid drop jet head as claimed in claim 4, wherein a plurality of the common liquid rooms is formed in a direction of a line of the liquid rooms independently and the respective common liquid rooms are arranged in parallel.

11. The liquid drop jet head as claimed in claim 4, wherein a plurality of the common liquid rooms is formed in a direction of a line of the liquid rooms independently and the respective common liquid rooms are arranged line-symmetrically.

12. The liquid drop jet head as claimed in claim 9, wherein a number of the liquid rooms connected to one of the common liquid room is in a range of two or more and thirty-two or less.

13. The liquid drop jet head as claimed in claim 9, wherein the respective common liquid rooms and the liquid rooms have partition walls and a width of the partition wall between the neighboring common liquid rooms has a substantially same length as the width of the partition wall between the neighboring liquid rooms.

14. The liquid drop jet head as claimed in claim 1, wherein the liquid rooms make a plurality of lines and the common liquid rooms for the every line of the liquid rooms are provided independently between the respective lines of the liquid rooms.

15. The liquid drop jet head as claimed in claim 14, wherein the supply opening part being common for the common liquid rooms for the every line of the liquid rooms is provided in the common liquid rooms so that the liquid is supplied.

16. The liquid drop jet head as claimed in claim 1, wherein the common liquid room is formed by anisotropically etching of a silicon substrate.

17. The liquid drop jet head as claimed in claim 16, wherein the common liquid room has a wall surface at a liquid room side of the common liquid room, and the wall surface has a plane configuration having an obtuse angle.

18. The liquid drop jet head as claimed in claim 1, wherein the supply opening part is provided at a surface opposite side to a lid member or a nozzle board forming a wall surface of the liquid room.

U.S. Application No. 10/721,209 CLAIMS

44. The liquid drop jet head as claimed in claim 43, wherein the supply opening part is formed by a mechanical process.

45. The liquid drop jet head as claimed in claim 43, wherein the supply opening part is formed by anisotropically etching.

46. The liquid drop jet head as claimed in claim 26, the liquid drop jet head further comprising a pressure generating part that generates a pressure pressurizing the liquid provided in the liquid room, wherein the pressure generating part includes a vibration board forming the wall surface of the liquid room and an electrode facing the pressure generating part so that the vibration board is deformed by an electrostatic force.

47. The liquid drop jet head as claimed in claim 26, the liquid drop jet head further comprising a pressure generating part that generates a pressure pressurizing the liquid provided in the liquid room, wherein the pressure generating part includes a vibration board forming the wall surface of the liquid room and an electric machine conversion element deforming the vibration board.

48. The liquid drop jet head as claimed in claim 26, the liquid drop jet head further comprising a pressure generating part that generates a pressure pressurizing the liquid provided in the liquid room, wherein the pressure generating part includes an electric thermal conversion element arranged in the liquid room.

49. The liquid drop jet head as claimed in claim 26, wherein the liquid drop jet head is used as an inkjet head, for an ink cartridge in which an ink tank supplying the ink to the ink jet head is unified.

50. An ink jet recording apparatus, comprising an ink jet head jetting the ink drop, the ink jet head includes a nozzle jetting a liquid drop, a liquid room connected to the nozzle, a common liquid room connected to the liquid room, to which the liquid is supplied from a supply opening part; wherein a width of the common liquid room decreases with an increase of a distance from the supply opening part.

U.S. Patent No. 6,682,185 CLAIMS

19. The liquid drop jet head as claimed in claim 18, wherein the supply opening part is formed by a mechanical process.

20. The liquid drop jet head as claimed in claim 18, wherein the supply opening part is formed by anisotropically etching.

21. The liquid drop jet head as claimed in claim 1, wherein the pressure generating part includes a vibration board forming the wall surface of the liquid room and an electrode facing the pressure generating part so that the vibration board is deformed by an electrostatic force.

22. The liquid drop jet head as claimed in claim 1, wherein the pressure generating part includes a vibration board forming the wall surface of the liquid room and an electric machine conversion element deforming the vibration board.

23. The liquid drop jet head as claimed in claim 1, wherein the pressure generating part includes an electric thermal conversion element arranged in the liquid room.

24. The liquid drop jet head as claimed in claim 1, wherein the liquid drop jet head is used as an ink jet head, for an ink cartridge in which an ink tank supplying the ink to the ink jet head is unified.

25. An ink jet recording apparatus, comprising an ink jet head jetting the ink drop, the ink jet head includes a nozzle jetting a liquid drop, a liquid room connected to the nozzle, a common liquid room connected to the liquid room, a supply opening part supplying the liquid to the common liquid room, and a pressure generating part which generates a pressure pressurizing the liquid provided in the liquid room, wherein the common liquid room has a configuration in which a width of the common liquid room on a plane level is narrower as a point of the width is more remote from the supply opening part.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 26-29, 32, 34-37, 42, 43, 47-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Yano et al (US 6,260,962).

Yano et al disclose in Figures 1, 2 and 10-12 the following claimed limitations:

Regarding claim 26, a liquid drop jet head (recording head unit IJU), comprising:

- a nozzle (5) jetting a liquid drop;

- a liquid room (liquid passage 14, 41b) connected to the nozzle (5); and

- a common liquid room (common chamber 15, 1301) connected to the liquid room (liquid passage 14, 41b), to which the liquid is supplied from a supply opening part (ink receiving port 1500);

wherein a width of the common liquid room (common chamber 15, 1301) decreases (Figure 2 shows common chamber 1301 having a triangular shape) with an increase of a distance (starting from ink receiving port 1500 moving towards the liquid passage 41b) from the supply opening part (ink receiving port 1500).

Regarding claim 27, wherein the width of the common liquid room (common chamber 15, 1301) on the plane level is narrower substantially consecutively (width connected from liquid passage 14, 41b having a triangular shape) as the point of the width is more remote from the supply opening part (ink receiving port 1500) (Figure 2).

Regarding claim 28, wherein the width of the common liquid room (common chamber 15, 1301) on the plane level is narrower substantially gradually (width connected from liquid passage 14, 41b having a triangular shape) as the point of the width is more remote from the supply opening part (ink receiving port 1500) (Figure 2).

Regarding claim 29, wherein the common liquid room (common chamber 15, 1301) has a configuration of a single wing (triangular shape) on a plane level (top view of Figure 2).

Regarding claim 32, wherein a wall surface opposite to the side to which the liquid room is provided in a common liquid room has a substantially arc configuration or a semicircle configuration in a direction of a line (column 14, lines 1-3).

Regarding claim 34, wherein a plurality of common liquid rooms (one common chamber 15 for each print cartridge IJC, Figure 18) is formed in a direction of a line (spacing between each print cartridge IJC) of the liquid rooms (liquid passage 14) independently.

Regarding claim 35, wherein a plurality of common liquid rooms (one common chamber 15 for each print cartridge IJC, Figure 18) is formed in a direction of a line (spacing between each print cartridge IJC) of the liquid rooms (liquid passage 14)

independently and the respective common liquid rooms are arranged in parallel (Figure 18).

Regarding claim 36, wherein a plurality of the common liquid rooms (one common chamber 15 for each print cartridge IJC, Figure 18) is formed in a direction of a line (spacing between each print cartridge IJC) of the liquid rooms (liquid passage 14) independently and the respective common liquid rooms are arranged line-symmetrically (Figure 18).

Regarding claim 37, wherein a number of the liquid rooms connected to one of the common liquid room is in a range of two or more and thirty-two or less (Figure 2 shows at least four liquid passages 41b).

Regarding claim 42, wherein the common liquid room (Figure 10, common chamber 15) has a wall surface (slant surface 1321) at a liquid room side of the common liquid room (Figure 2, common chamber 1301), and the wall surface (1321) has a plane configuration having an obtuse angle (since the surface 1321 is slanted).

Regarding claim 43, wherein the supply opening part (ink receiving port 1500) is provided at a surface (bottom surface of ceiling plate 1300) opposite side to a lid member or a nozzle board (Figure 3, orifice plate 400) forming a wall surface of the liquid room (liquid passage 41b).

Regarding claim 47, the liquid drop jet head (recording head unit IJU) further comprising a pressure generating part that generates a pressure pressurizing the liquid provided in the liquid room (liquid passage 14, 41b), wherein the pressure generating part includes a vibration board forming the wall surface of the liquid room (liquid

Regarding claim 48, the liquid drop jet head (recording head unit IJU) further comprising a pressure generating part (Figure 1, electrothermal conversion element H) that generates a pressure pressurizing the liquid provided in the liquid room (liquid passage 14), wherein the pressure generating part includes an electric thermal conversion element (Figure 1, electrothermal conversion element H) arranged in the liquid room (liquid passage 14).

Regarding claim 49, wherein the liquid drop jet head (recording head unit IJU) is used as an inkjet head (Figure 3, recording head IJH), for an ink cartridge (Figure 4, recording cartridge IJC) in which an ink tank (Figure 5, ink tank IJT) supplying the ink to the ink jet head (Figure 3, recording head IJH) is unified.
passage 14, 41b) and an electric machine conversion element deforming the vibration board (column 20, lines 4-10).

Regarding claim 50, an inkjet recording apparatus, comprising an ink jet head (recording head unit IJU) jetting the ink drop, the ink jet head (recording head unit IJU) includes:

- a nozzle (5) jetting a liquid drop;
- a liquid room (liquid passage 14, 41b) connected to the nozzle (5); and
- a common liquid room (common chamber 15, 1301) connected to the liquid room (liquid passage 14, 41b), to which the liquid is supplied from a supply opening part (ink receiving port 1500);

wherein a width of the common liquid room (common chamber 15, 1301) decreases (Figure 2 shows common chamber 1301 having a triangular shape) with an increase of a distance (starting from ink receiving port 1500 moving towards the liquid passage 41b) from the supply opening part (ink receiving port 1500).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al (US 6,260,962).

Yano et al disclose the claimed invention except for specifically reciting the common liquid room (common chamber 1301) has a configuration of dual single wings (column , lines) on a plane level (top view of Figure 2). However, Yano et al does disclose the common liquid room (common chamber 1301) can have a configuration of any shapes (column 13, lines 46-50) on a plane level (top view of Figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a configuration of dual wings of the common liquid room so as to feed ink to the liquid room or chamber.

11. Claims 41 and 44-46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al (US 6,260,962) in view of Fujii et al (US 5,912,684).

Regarding claim 41, wherein the common liquid room (5) is formed by anisotropically etching (6) is formed by anisotropically etching of a silicon substrate (2A)(column 16, lines 14-19)Regarding claim 44, wherein the supply opening part is formed by a mechanical processRegarding claim 44, wherein the supply opening part (14) is formed by a mechanical process (column 11, lines 6-9)Regarding claim 45, wherein the supply opening part (14) is formed by anisotropically etchingRegarding claim 45, wherein the supply opening part (14) is formed by anisotropically etchingRegarding claim 46, wherein (11) pressure generating part includes a vibration board having a vibration surface of the liquid room skill in the art of etching the pressure generating part so that the vibration liquid chamber supply opening part is formed by anisotropically etching or mechanical process, as taught by Fujii et al into Yano et al, for the purpose of forming the depth the cavity in the substrate (column 4, lines 8-13).

Regarding claim 46, Yano et al disclose the liquid drop jet head (recording head IJU) further comprising a pressure generating part (electrothermal conversion element H) that generates a pressure (bubbles 4, 9, 10) pressurizing the liquid provided in the liquid room (liquid passage 14).

Yano et al disclose the claimed invention except for the following:

Fujii et al teach the following:

Further regarding claim 46, wherein the pressure generating part includes a vibration board (Figure 1, diaphragm 5) forming the wall surface of the liquid room (ejection chambers 6) and an electrode (31) facing the pressure generating part (diaphragm 5) so that the vibration board is deformed by an electrostatic force (column

3, lines 65-67), for the purpose of providing a small size print head with high in density, printing speed, printing quality and long life (column 4, lines 8-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a vibration board forming the wall surface of the liquid room and an electrode facing the pressure generating part so that the vibration board is deformed by an electrostatic force, as taught by Fujii et al into Yano et al, for the purpose of providing a small size print head with high in density, printing speed, printing quality and long life (column 4, lines 8-13).

Allowable Subject Matter

12. Claims 30, 33 and 38-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claims 30, 33 and 38 is the inclusion of the limitation of a liquid drop jet head that includes a supply opening art provided at a wall surface side opposite to the wall surface side to which the liquid room in the common liquid room is provided, an external side of the wall surface, or an external side of the liquid room being in a direction of a line of the liquid room. It is this limitation found in each of the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 39 and 40 is the inclusion of the limitation of a liquid drop jet head that includes a plurality of liquid rooms that make a plurality of lines and the common liquid rooms for the every line of the liquid rooms are provided independently between the respective lines of the liquid rooms. It is this limitation found in each of the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Iketani et al (US 5,826,333) disclose an inkjet head having a plurality of chips provided on a supporting substrate. Khuri-Yakub et al (US 5,828,394) disclose an array of fluid drop ejectors formed on a substrate.

Contact Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AD
September 17, 2004

R 7/1 - 9/04
KRISTAL Feggins
Primary Exa